



e-ISSN: 2319-8753 | p-ISSN: 2347-6710

IJIRSET

International Journal of Innovative Research in
SCIENCE | ENGINEERING | TECHNOLOGY

INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

Volume 12, Issue 8, August 2023

ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA

Impact Factor: 8.423

9940 572 462

6381 907 438

ijirset@gmail.com

www.ijirset.com

Environmental Concern: Poor Production Techniques in Fashion and Garment Industries Causing Health Hazards

¹Dr. Ritu Gupta, ²Dr. Rachana Asopa

¹Professor, Garment Production and Export Management, G.D Government College for Women, Alwar, India

²Professor, Chemistry, G.D Government College for Women, Alwar, India

ABSTRACT: On a Saturday afternoon, a group of teenage girls leap through glossy fashion magazines at a New Jersey outlet mall. Shopping bags brimming with new purchases lay at their feet while they talk excitedly about what's in style to wear this summer. Far away in Tanzania, a young man proudly wears a T-shirt imprinted with the logo of an American basketball team while shopping at the local mitumba market for pants that will fit his slender figure. Although seemingly disparate, these two scenes are connected through the surprising life cycle of clothing.

How does a T-shirt originally sold in a U.S. shopping mall to promote an American sports team end up being worn by an African teen? Globalization, consumerism, and recycling all converge to connect these scenes. Globalization has made it possible to produce clothing at increasingly lower prices and these prices are so low that many consumers consider this clothing to be disposable. Some call it "fast fashion," the clothing equivalent of fast food.

Fast fashion provides the marketplace with affordable apparel aimed mostly at young women. Fuelling the demand are fashion magazines that help create the desire for new "must-haves" for each season. "Girls especially are insatiable when it comes to fashion. They have to have the latest thing, always. And since it is cheap, you buy more of it. Our closets are full," says Mayra Diaz, mother of a 10-year-old girl and a buyer in the fashion district of New York City. Disposable couture appears in shopping mall after shopping mall in America and Europe at prices that make the purchase tempting and the disposal painless.

KEYWORDS: Fashion, garment, waste couture, production techniques. Sustainability, environmental concern, organizations.

I. INTRODUCTION

Yet fast fashion leaves a pollution footprint, with each step of the clothing life cycle generating potential environmental and occupational hazards. For example, polyester, the most widely used manufactured fiber, is made from petroleum. With the rise in production in the fashion industry, demand for man-made fibers, especially polyester, has nearly doubled in the last 15 years, according to figures from the Technical Textile Markets. The manufacture of polyester and other synthetic fabrics is an energy-intensive process requiring large amounts of crude oil and releasing emissions including volatile organic compounds, particulate matter, and acid gases such as hydrogen chloride, all of which can cause or aggravate respiratory disease. Volatile monomers, solvents, and other by-products of polyester production are emitted in the wastewater from polyester manufacturing plants. The EPA, under the Resource Conservation and Recovery Act, considers many textile manufacturing facilities to be hazardous waste generators.

Issues of environmental health and safety do not apply only to the production of man-made fabrics. Cotton, one of the most popular and versatile fibers used in clothing manufacture, also has a significant environmental footprint. This crop accounts for a quarter of all the pesticides used in the United States, the largest exporter of cotton in the world, according to the USDA. The U.S. cotton crop benefits from subsidies that keep prices low and production high. The high production of cotton at subsidized low prices is one of the first spokes in the wheel that drives the globalization of fashion.

Much of the cotton produced in the United States is exported to China and other countries with low labour costs, where the material is milled, woven into fabrics, cut, and assembled according to the fashion industry's specifications. China has emerged as the largest exporter of fast fashion, accounting for 30% of world apparel exports, according to the UN Commodity Trade Statistics database. In her 2005 book *The Travels of a T-Shirt in the Global Economy*, Pietra Rivoli, a professor of international business at the McDonough School of Business of Georgetown University, writes that each year Americans purchase approximately 1 billion garments made in China, the equivalent of four pieces of clothing for every U.S. citizen.

According to figures from the U.S. National Labor Committee, some Chinese workers make as little as 12–18 cents per hour working in poor conditions. And with the fierce global competition that demands ever lower production costs, many emerging economies are aiming to get their share of the world's apparel markets, even if it means lower wages and poor conditions for workers. Increasingly, clothing being imported to the United States comes from countries as diverse as Honduras and Bangladesh. Each step of the clothing production process carries the potential for an environmental impact. For example, conventionally grown cotton, one of the most popular clothing fibers, is also one of the most water- and pesticide-dependent crops (a view disputed by Cotton Incorporated, a U.S. cotton growers' group). At the factory stage, effluent may contain a number of toxics (below, waste products from a garment factory in Dhaka, Bangladesh, spill into a stagnant pond).



Once bought, an estimated 21% of annual clothing purchases stay in the home, increasing the stocks of clothing and other textiles held by consumers, according to *Recycling of Low-Grade Clothing Waste*, a September 2006 report by consultant Oakdene Hollins. The report calls this stockpiling an increase in the "national wardrobe," which is considered to represent a potentially large quantity of latent waste that will eventually enter the solid waste stream. According to the EPA Office of Solid Waste, Americans throw away more than 68 pounds of clothing and textiles per person per year, and clothing and other textiles represent about 4% of the municipal solid waste. But this figure is rapidly growing.

Everything old is new again

In her book *Waste and Want: A Social History of Trash*, Susan Strasser, a professor of history at the University of Delaware, traces the "progressive obsolescence" of clothing and other consumer goods to the 1920s. Before then, and especially during World War I, most clothing was repaired, mended, or tailored to fit other family members, or recycled within the home as rags or quilts. During the war, clothing manufacturers reduced the varieties, sizes, and colors of their productions and even urged designers to create styles that would use less fabric and avoid needless decoration. The government's conservation campaign used slogans such as "Make economy fashionable lest it become obligatory" and resulted in an approximate 10% reduction in the production of trash.

However, the spirit of conservation did not last long; by the mid-1920s consumerism was back in style. Industrialization grew in the twentieth century, providing the means of increased production of all consumer goods. During World War II, consumption rose with increased employment as the United States mobilized for the war. The production and consumption of many household goods, including clothing, grew by 10–15% even in the middle of the war and continues to expand to this day.

Industrialization brought consumerism with it as an integral part of the economy. Economic growth came to depend on continued marketing of new products and disposal of old ones that are thrown away simply because stylistic norms promote their obsolescence. When it comes to clothing, the rate of purchase and disposal has dramatically increased, so the path that a T-shirt travels from the sales floor to the landfill has become shorter.

Fierce global competition in the garment industry translates into poor working conditions for many laborers in developing nations. (top) A worker in Phnom Penh, Cambodia, rests on the floor of a garment factory. More than 2,000 young women work in this factory, producing clothes for shops in Europe and North America. (bottom) The owner of a textile factory in Dhaka threatens a child laborer, who works for 10 hours a day to earn US\$1. Yet even today, the journey of a piece of clothing does not always end at the landfill. A portion of clothing purchases are recycled mainly in three ways: clothing may be resold by the primary consumer to other consumers at a lower price, it may be exported in bulk for sale in developing countries, or it may be chemically or mechanically recycled into raw material for the manufacture of other apparel and nonapparel products.

Domestic resale has boomed in the era of the Internet. Many people sell directly to other individuals through auction websites such as eBay. Another increasingly popular outlet is consignment and thrift shops, where sales are growing at a pace of 5% per year, according to the National Association of Resale and Thrift Shops.

The U.S. government offers tax incentives for citizens who donate household goods to charities such as the Salvation Army and Goodwill Industries, which salvage a portion of clothing and textiles that would otherwise go to landfills or incinerators. The trend of increased purchasing of clothing and other household goods has served the salvage charities well. For instance, since 2001 Goodwill Industries has seen a 67% increase in its sale of donated goods, most of it clothing. Figures from the National Association of Resale and Thrift Shops put Goodwill's sales of donated goods at thrift shops at more than \$1.8 billion in 2006.

A 2006 survey conducted by America's Research Group, a consumer trends research firm, found that about 12–15% of Americans shop at consignment or resale stores. The Council for Textile Recycling estimates that 2.5 billion pounds of postconsumer textile waste (which includes anything made of fabric) is thus collected and prevented from entering directly into the waste stream. This represents 10 pounds for every person in the United States, but it is still only about 15% of the clothing that is discarded.

Handling the overflow

Only about one-fifth of the clothing donated to charities is directly used or sold in their thrift shops. Says Rivoli, "There are nowhere near enough people in America to absorb the mountains of castoffs, even if they were given away."

So charities find another way to fund their programs using the clothing and other textiles that can't be sold at their thrift shops: they sell it to textile recyclers at 5–7 cents per pound. Since 1942, the Stubin family of Brooklyn, New York, has

owned and operated Trans-America Trading Company, where they process more than 12 million pounds of postconsumer textiles per year. Trans-America is one of the biggest of about 3,000 textile recyclers in the United States. At its 80,000-square-foot sorting facility, workers separate used clothing into 300 different categories by type of item, size, and fiber content. According to figures from Trans-America, about 30% of these textiles are turned into absorbent wiping rags for industrial uses, and another 25–30% are recycled into fiber for use as stuffing for upholstery, insulation, and the manufacture of paper products.

About 45% of these textiles continue their life as clothing, just not domestically. Certain brands and rare collectible items are imported by Japan, the largest buyer in terms of dollars of vintage or American high-end fashion. Clothing that is not considered vintage or high-end is baled for export to developing nations. Data from the International Trade Commission indicate that between 1989 and 2003, American exports of used clothing more than tripled, to nearly 7 billion pounds per year. Used clothing is sold in more than 100 countries. For Tanzania, where used clothing is sold at the mitumba markets that dot the country, these items are the number one import from the United States.

Imported apparel from America and Europe is bought in 100-pound bales of mixed clothing by small entrepreneurs. Like opening a piñata, these merchants sort through the contents of the bales to see whether their investment has paid off. Prices are set according to the latest fashions, the condition of the clothing, and its desirability. For example, men's light slacks in perfect condition and in waist sizes in the low 30s fetch a premium price of \$5.00. T-shirts sell well, especially those with logos from winning sports teams or recognizable athletic gear companies.

Because women in the West tend to buy much more clothing and discard it more often than men, the world supply of used women's clothing is at least seven times that of men's. Thus, in the mitumba markets around Tanzania, men's clothing generally costs four to five times more than similar women's clothing. Winter clothes, although generally more expensive to produce, command the least value in the secondhand African markets. Companies such as Trans-America are therefore seeking to expand into colder climates such as Eastern Europe.

Observers such as Rivoli predict that the trend toward increasing exports of used clothing to developing countries will continue to accelerate because of the rise of consumerism in the United States and Europe and the falling prices of new clothing. There are detractors to this view, however. For example, the Institute for Manufacturing at Cambridge University issued a report in 2006 titled *Well Dressed? The Present and Future Sustainability of Clothing and Textiles in the United Kingdom*, in which it raised concerns that trade in second hand clothes in African countries inhibits development of local industries even as it creates employment in these countries. And the authors of *Recycling of Low-Grade Clothing Waste* warn that in the long run, as prices and quality of new clothing continue to decline, so too will the demand for used clothing diminish. This is because in the world of fast fashion, new clothing could be bought almost as inexpensively as used clothing. Even so, says Rivoli, "Continued rampant consumerism as well as changing waste disposal practices would seem to ensure a growing supply of American used clothing for the global market." A woman shops at a mitumba (Swahili for "second hand") market in Nairobi, Kenya. Middlemen purchase bales of clothing at a set price to resell at the mitumba market. Sometimes the bales contain prize garments, other times fewer desirable items, and the clothing may be sold by the piece or by weight. People often buy large amounts of clothing to resell yet again in smaller markets outside the city. A woman shops at a mitumba (Swahili for "second hand") market in Nairobi, Kenya. Middlemen purchase bales of clothing at a set price to resell at the mitumba market. Sometimes the bales contain prize garments, other times fewer desirable items, and the clothing may be sold by the piece or by weight. People often buy large amounts of clothing to resell yet again in smaller markets outside the city.

In the European Union, the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH) regulations enacted 1 June 2007 require clothing manufacturers and importers to identify and quantify the chemicals used in their products. These regulations may even require manufacturers to inform consumers about potentially hazardous chemicals that may be present in their products and can leach out, such as often happens with dyes (details of how the regulations will be implemented are still being worked out). Actual end products are governed by stipulations of the European Equipment and Product Safety Act, which regulates the use of heavy metals, carcinogenic dyes, and other toxics used in textile manufacture. Additional consumer protection is offered by the European Union's Öko-Tex Standard 100, a testing and certification program established in 1992. The standard gives the textile and clothing industry uniform guidance for the potential harm of substances in raw materials as well as finished products, and every stage in between—these include regulated substances as well as substances that are believed to be harmful to health but are not yet regulated (such as pesticides). The standard also governs elements such as colorfastness and pH value.

Such regulations and standards, coupled with increasing consumer awareness about less toxic and sustainable products, may provide some impetus to revolutionize the garment industry. However, the biggest impacts for increasing sustainability in the clothing industry rests with the consumer. Using detergents that work well at lower temperatures, extending the usable life of garments, purchasing fewer and more durable garments, and recycling these garments into the used clothing market or into other garment and non-garment products all would contribute to increasing sustainability. Consumer awareness about the fate of clothing through its life cycle may be the best hope for sustainability in the fashion industry.



PREVAILING TRENDS IN INDIAN READYMADE GARMENT / FASHION INDUSTRY LEADS TO LOT OF WASTE COUTURE:







II. CONCLUSIONS

Textile industry in India is widely comprehensive, integrating whole range of raw material to finished product that includes fibre manufacturing, spinning, knitting and weaving, and garment manufacture. In recent years, the readymade garment segment has seen vertical growth. Accounting nearly Rs. 20,000 crores, this industry is growing at the rate of 20 percent, with massive visibility and consideration margins. The largest segment for the readymade garment segment includes the age group of 16-35 that is very brand conscious and gives priority to high quality. Branded readymade garments account over 21 percent of the readymade garment industry. Despite substantial growth, comparing to the international readymade garment market of nearly 183mn USD, the Indian readymade garment market is still in a budding phase. Due to the higher the introduction cost of brand in India for the foreign players, domestic players have no fear of any outside competition. The main obstacle to the organized players is the huge unorganized scenario of the market. In a move to compete, the organized players have rolled out their own strategy of standardizing the goods.

Finally, the retailers have been doing their fair share. Certain companies have a local presence in the country, for example Marks & Spencer and H&M both have locally based teams – showing their commitment to sourcing in the country, assuring that their employees understand the local context and maintaining a good relationship with the suppliers. Additionally, certain companies have indicated that when necessary they coordinate with other companies when it comes to auditing common suppliers thereby better utilizing their resources and making the first steps towards industry-wide coordination on supply chain matters.

Yet there is still much to do

Despite the improvements that have been made, the path to a completely sustainable garment industry is still a long one. Fire and building safety issues are still prominent. While the factories are located in purpose-built buildings, not all are. The level of improvements needed per factory vary and while factory inspections are on their way, not much is yet known about the remediation and how factories are progressing in their corrective action plans. Additionally, out of the roughly 10,000 factories there are in the country, only around 5,500 are exporting to western brands and are most probably included in at least one of the initiatives to improve fire and building safety. The remaining factories, which cater mainly to the local markets, are out of scope and thus still pose a risk to the safety of their workers. Additionally, the risk of unauthorized sourcing to “at risk” factories is still a high possibility that a lot of the brands sourcing from the country face.

Moreover, while the most will be done to ensure that factories remain open and are safe, there will be factories that would have to close as their facilities would never be fit for use. The question of how to handle this likely event, such as how to help the employees find employment elsewhere, has yet to be dealt with. While it is important that these initiatives focus on the factory inspections and remediation at the moment, there is also the need to start discussing on how to ensure that the work and the positive outcomes from these initiatives .Beyond fire and building safety: other obstacles towards a sustainable garment industry in the country. The long term view of the sustainable growth of the industry is still blurry. In addition to fire and building safety matters, other issues such as proper working conditions, much needed infrastructure and a long-term view both from brands and factories are hampering the industry’s development.

From a country perspective, the current infrastructure would not be able to support the garment industry’s growth. Infrastructure such as paved roads, highways, ports and a steady flow of electricity is limited. Additionally, lack of skilled workers is a concern for the industry and country.

These issues are national matters that cannot be dealt by one industry alone. Social issues are still prevalent in the industry. Proper worker representation is still limited with effective unions in factories being almost non-existent. Furthermore, factories are faced with other issues such as the quality of the labour force.

Factories still get mixed messages from their clients. Audits are not standardized and are, sometimes, contradictory depending on the company doing the audit. A certain anecdotal story from a factory manager saying how they had to move the daycare center several times because of the audits shows how much time and effort factories have to exert just to comply with varying standards. Additionally, certain companies are still bargaining on price – making it difficult for factories to make the necessary investments and implement the initiatives to become a better garment factory.

Improving a corporation’s sustainability footprint and reducing environmental impact is about more than just recycling materials. It requires a more holistic corporate approach that includes reusing environmentally-friendly packaging, reducing manufacturing and operational waste and pollution, improving building energy efficiency and reducing energy consumption, moving towards the use of renewable energy, improving shipping and transportation efficiencies, and designing sustainability into the products and services that are sold to the public.

Never Too Late to Follow the Right Path.

REFERENCES

1. DeLong, K. R. (2011). A consumer vision for sustainable fashion practice. *The Journal of Design, Creative Process & the Fashion Industry*, 3 (1), 63-83.
2. Junghyun Jang, E. K. (2012). A study of a social content model for sustainable development in the fast fashion industry. *Journal of Global Fashion Marketing: Bridging Fashion and Marketing*, Volume 3, Issue 2, pages 61-70.
3. Finn, A. L. (2008). *Fashion manufacturing in New Zealand: can design contribute to a sustainable fashion Industry*. Auckland University of Technology.
4. Choi, H. P. Y. M. (2012). A Five-R analysis for sustainable fashion supply chain management in Hong Kong: a case analysis. *Journal of Fashion Marketing and Management: An International Journal*, 16 (2), 161-175.
5. Koskennurmi-Sivonen, M. A. (2013). Designing sustainable fashion: possibilities and challenges. *Research Journal of Textile & Apparel*, Volume 17, Issue 1, Page 13-22.



6. Moisander, A. M. (2012). Discursive confusion over sustainable consumption: A discursive perspective on the perplexity of marketplace knowledge. *Journal of Consumer Policy*, Pages: 105–125.
7. Anika Kozłowski, M. B. (2012). Environmental impacts in the fashion industry. *Journal of Corporate Citizenship*, Pages 16-36.
8. C. Morais, C. C. (2011). A design tool to identify and measure the profile of sustainable conscious fashion. *150 Years of Innovation and Research in Textile Science*, Mulhouse, France:AUTEX, pp. 388-393.
9. Helen Goworek, T. F. (2012). The sustainable clothing market: an evaluation of potential strategies for UK retailers. *International Journal of Retail & Distribution Management*, Volume 40, Issue 12, Pages 935.
10. Alex Assoune, Top 10 Sustainable Fashion Organizations and Initiatives, article by founder, owner, and Chief Executive Officer of Panaprium, the global digitally-native sustainable fashion brand. Panaprium.com 2023.
11. Angelis-Dimakis et al. Value chain upgrading in a textile dyeing industry, *J. Clean. Prod.* (2016)
12. F.A. Esteve-Turrillas et al. Environmental impact of recover cotton in textile industry
13. Resource . *Conserv. Recycl.*(2017)
14. A.Y. Hoekstra,The sustainability of a single activity, production process or product
15. *Ecol. Indic.* (2015)
16. A.K. Janaina et al. Textile sustainability: A Brazilian etiquette issue ;*Environ. Sci. Pol.* (2020)
17. Budi Harsanto, Sustainability Innovation in the Textile Industry: A Systematic Review: *Sustainability* 2023, 15(2), 1549.
18. F. Jia et al. The circular economy in the textile and apparel industry: Systematic literatures review *J. Clean. Prod.* (2020)
19. T. Karthik et al. Carbon footprint in denim manufacturing, *Sustainable. Denim* (2017)
20. Yan Luo, Donghua University, Environmental sustainability of textiles and apparel: A review of evaluation methods, *Environmental Impact Assessment Review* 86:106497, January 2021
21. International Labour Organization (ILO) 2021, Greener clothes? Environmental initiatives and tools in the garment sector in Asia ILO Asia-Pacific report May 2021, first published 2021



INNO SPACE
SJIF Scientific Journal Impact Factor
Impact Factor: 8.423



ISSN INTERNATIONAL
STANDARD
SERIAL
NUMBER
INDIA



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN SCIENCE | ENGINEERING | TECHNOLOGY

9940 572 462 **6381 907 438** **ijirset@gmail.com**



www.ijirset.com

Scan to save the contact details